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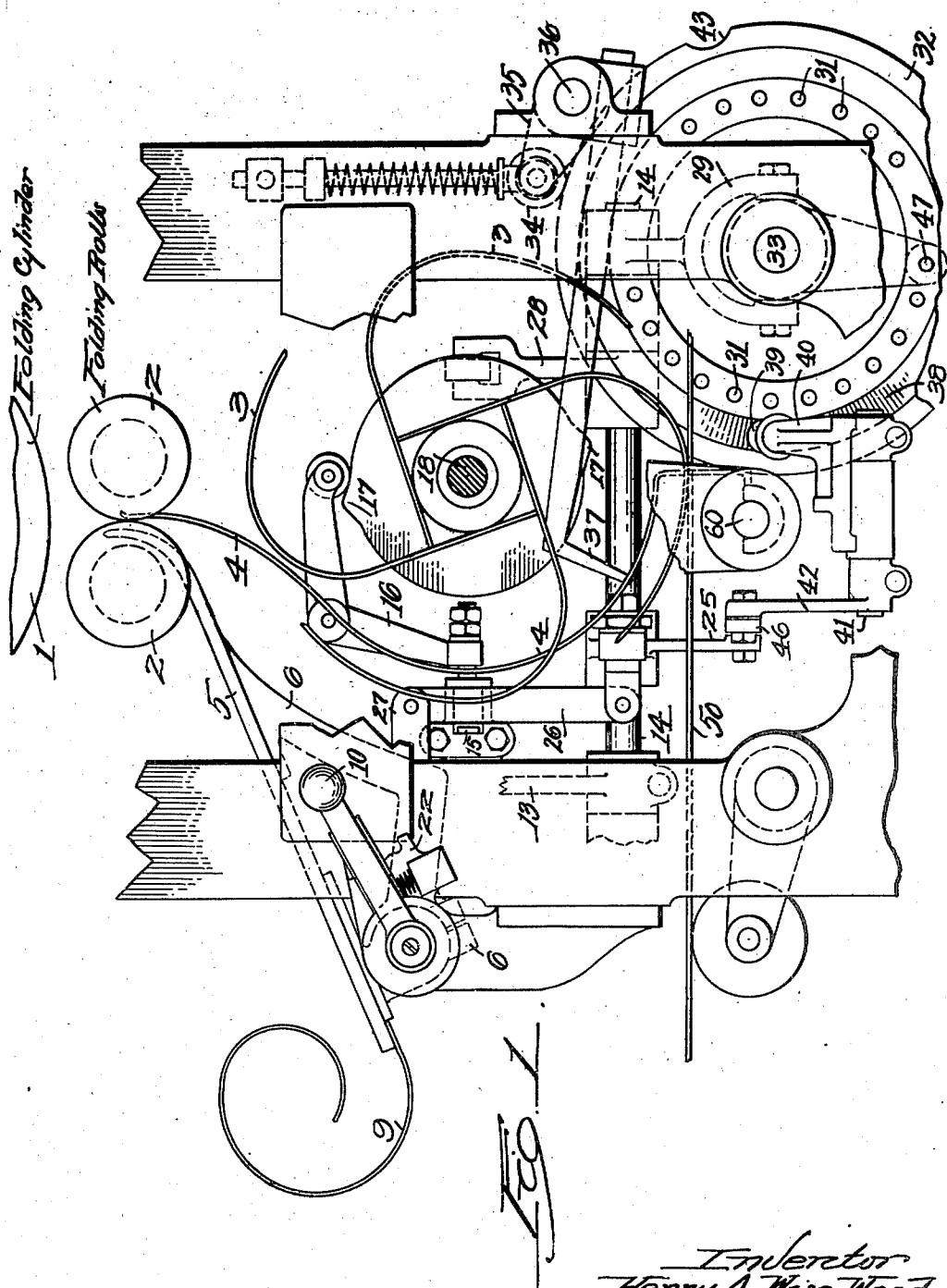
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PAPER THROW-OUT AND COUNT RECTIFYING DEVICE

Original Filed Jan. 31, 1927

3 Sheets-Sheet 1



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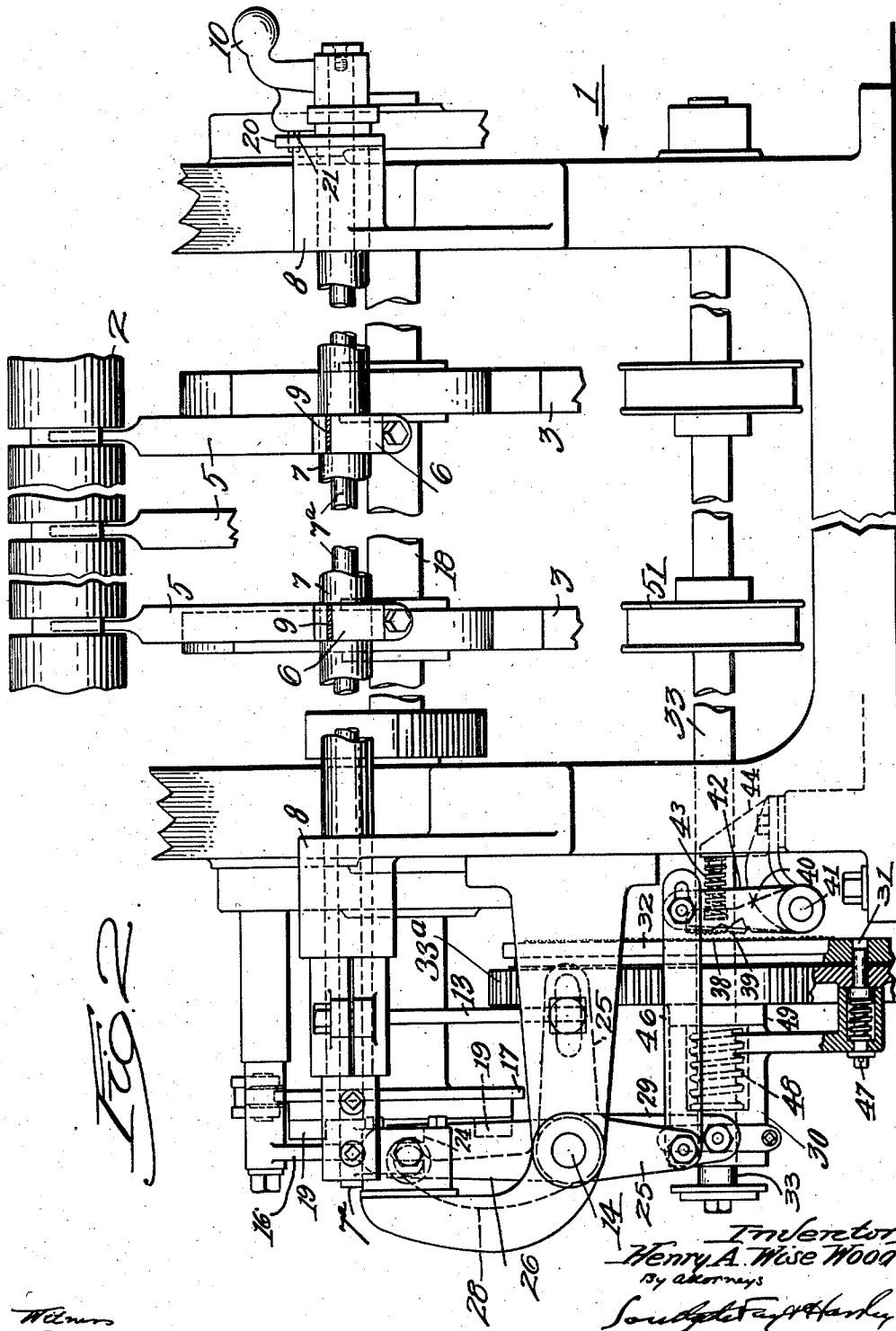
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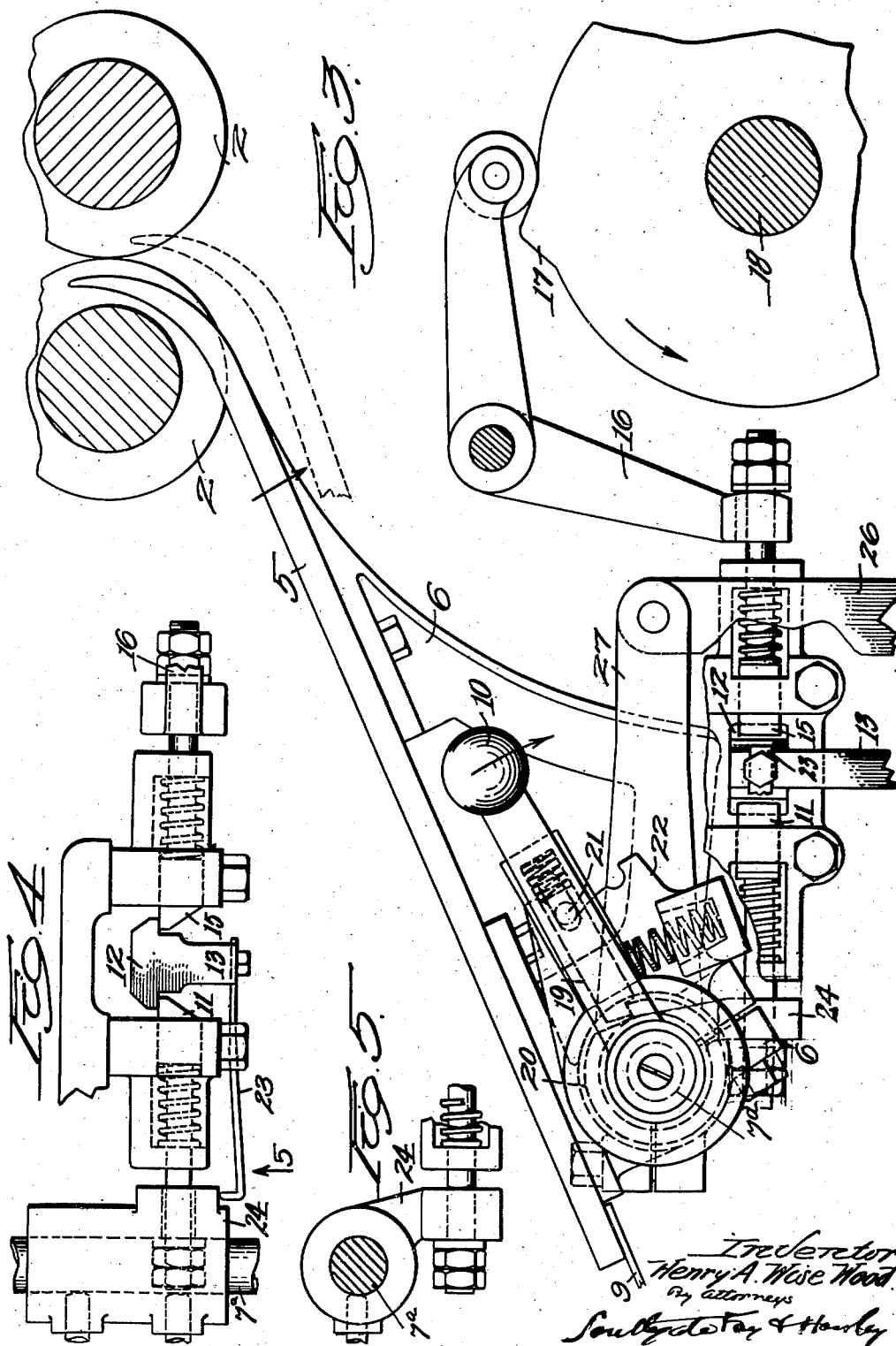
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PAPER THROW-OUT AND COUNT-RECTIFYING DEVICE

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This invention relates to a folding, delivering and counting device for a newspaper printing machine. The principal objects of the invention are to provide means whereby, by the simple operation of a handle or similar element, the folder will divert one collected, or two non-collected, products out of the normal path of the folded products and at the same time the count will rectify itself automatically so that all piles are composed of the same number of papers; to provide means for preventing the diversion of any more than the desired number of papers at each operation of the handle; to provide for the proper timing of the mechanism so that the handle can be operated at any time and the parts connected with it will perform their operation at a predetermined instant during that rotation of the delivery fan; and to provide a convenient means for disconnecting the counter when a product is diverted and starting it again so that the products will be divided into piles all of exactly the same number no matter how many have been diverted from the fan.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which

Fig. 1 is an end view of a folder constructed in accordance with this invention;

Fig. 2 is a front view thereof with parts omitted for the sake of clearness;

Fig. 3 is an enlarged view like a portion of Fig. 1 showing the throw-out mechanism;

Fig. 4 is a plan of the latch device; and

Fig. 5 is a side view of the same as indicated by the arrow 5 in Fig. 4.

Ordinarily, when the pressman desires to inspect the printed papers, he withdraws the required paper or papers from the pile of papers on the delivery belts. In order not to disturb the count of that particular pile, he has to replace the papers withdrawn by a similar number of papers which are reserved for that purpose. This involves the danger of incorrect replacement and therefore the delivery of a pile, occasionally, not containing the same number of papers as the rest of them. Also the regularity of the papers in the pile is dis-

turbed in some instances to such an extent that trouble is encountered when the papers enter the dispatch conveyors on their way to the mailing room.

This invention is designed to avoid these difficulties. When a paper is to be withdrawn, it is merely necessary for the pressman to operate a handle. The folder then automatically ejects one collected, or two non-collected products, on a special paper receiving tray. At the same time the count automatically rectifies itself so that all piles of papers delivered by the folder are composed of the same number. The ejection of more than one paper at each operation of the handle is prevented.

Referring to the drawing, I have shown the folder as comprising the customary folding cylinder 1 provided with the usual folding rollers 2 between which the folded papers are fed into rotary fan buckets 3. The papers are guided down in front by guides 4 in the usual way into the particular bucket, which happens to be located in position to receive them, as they are delivered from the rolls 2. At the top of the guide 4 there is another guide 5 movably located and normally in the position shown in full lines in Fig. 3. Here it is out of the way of the path of the papers and does not interfere with their travel down the guide 4. These guides 5 are supported on suitable brackets 6 which are fastened to a pipe 7. This pipe 7 surrounds a rod 7^a which in turn is journaled on brackets 8 fastened to the side frame of the folder. At the far end, that is the bottom of the inclined guides 5, a delivery tray 9 is fastened. This is turned up in the general form illustrated and causes the papers delivered into it to curl up in it and stops them there so that they can be removed at leisure.

These parts are operated by a manually controlled operating handle 10 having extensions pivoted on the pipe 7 so that it can swing about the same as a center. On the pipe 7 is fixed a collar having an arm 24, adapted to engage a nut or projection on the end of the latch 11 to draw it back. For the present it will be sufficient to say that the moving of the handle 10 down as shown by

the arrow in Fig. 3 withdraws a spring latch 11 from the position shown in Fig. 4 so that a lug 12 on a lever 13 is now held back only by a similar spring latch 15. This latch 15 is operated twice during each revolution of the fan shaft 18 by cam lugs 17 on the edge of a cam on that shaft. This swings a lever 16 and withdraws the latch 15.

The lever 13 is clamped to a rock shaft 14 running transversely across the machine at the rear of the folder. This lever 13 on which the lug 12 is located, cannot be moved until both latches 11 and 15 are withdrawn. The former is withdrawn by hand and therefore this action is under the control of the operator. He can withdraw it at any time and that will permit the lever 13 to rock the shaft 14 at the moment when one of the cam lugs 17 causes the lever 16 to withdraw the latch 15. This makes the timing operation of the device independent of the hand operation through the lever 10 and permits the rocking of the shaft only at stated intervals. There are two cam lugs 17 because there are four buckets on the fan in the form shown in the drawings.

The oscillation of the shaft 14 takes with it a bell crank 25 fastened thereto. A link 26 connected with the bell crank operates a lever 27 fastened to the pipe 7 and therefore oscillates that, taking with it the bracket 6 and guide 5 fastened to the pipe. This brings the guide into the position shown in dotted lines in Fig. 3. This is so timed as to skip the open edge of the preceding paper and bring the end of the guide 5 in front of the folded edge of the in-coming paper so as to deflect it into the tray 9.

The shaft 14 is swung back to its original position by either one of two projections 19 on the face of the cam on which are the lugs 17. These projections 19 act against a lever 28 which is clamped around the shaft 14. They operate of course twice during each complete rotation of the shaft 18 and return the guide 5 to its upper position where it does not deflect the papers. It will be seen that the cam projections 17 and 19 are so located that the restoration of the guide 5 takes place after one collected or two non-collected products have been received and deflected by it.

When the lug 12 is released by the withdrawal of the two spring latches 11 and 15, the shaft 14 is turned in a direction to swing the arm 13 and pull the lug 12 in between the latches 11 and 15 from the position shown in Fig. 4. This is accomplished by a spring 48 on the delivery belt shaft 33 resting against a collar 49 fixed to that shaft. The spring is located in a recess in a sliding member 30 and operates an arm 29 which is in the form of a yoke fixed to the shaft 14. This swings the several arms on the shaft 14 in a counter-clockwise direction in Fig. 2. One effect of

this is to directly cause the turning of the pipe 7 and the movement of the guide 5 from the full line position in Fig. 3 to the dotted line position. There it will receive the next product as stated above.

In order to insure the delivery of not more than one collected or two non-collected papers for one operation of the handle 10 without regard to the keeping of the handle in depressed position, I have provided means for disconnecting the handle 10 from the shaft or rod 7^a. For this purpose I provide a spring pressed pin 19 movable longitudinally on the handle 10 and having a tooth at the end engaging in a notch formed in a disc 20 fastened to the rod 7^a. The pin 19 is provided with a transverse pin 21 operating in a longitudinal slot in one side of the lever 10. Fixed on the pipe 7 is a cam plate 22 having two notches at opposite ends for the pin 21 and stops beyond said notches. This cam plate is so shaped as to draw back the pin 21 and withdraw the tooth on the pin 19 from the notch in the disc 20 when the handle is moved downward to its lowermost position. This disconnects the handle from the rod 7^a.

When the rod 7^a carrying the disc 20 is rotated by the handle 10, a flexible spring 23 attached to the lever 13 engages the face of a lever 24. This lever is connected with the spring-pressed latch 11 and therefore the end of the spring 23 will prevent the latch 11 being forced inwardly by its spring. Therefore it remains, for the time being, out of the way of the lug 12, even though the handle 10 is raised to its original position before the required paper has been ejected.

When the lever 13 is moved by the turning of the shaft 14, this takes the spring 23 away from in front of the lever 24. Then the spring on the latch 11 forces it into position to latch over the projection 12 when the lever 13 is restored. The latch 15 is always in position to latch over the lug 12 when lugs 17 are not operating the lever 16. The latches 11 and 15 and the rear corners of the lug 12 are bevelled off for this purpose. Thus when the handle 10 and disc 20 are returned to the normal position shown in Fig. 3, connection between them is resumed by the tooth on the end of the pin 19 and the notch in the disc 20.

The counting arrangement is also combined with the features described above. The shaft 33 is driven from the main shaft 60 by a pinion through a gear 33^a fixed on the shaft 33. The yoke 29 on the shaft 14 is connected pivotally with the member 30 which is slidably keyed to the shaft 33. The counter disc 32 is free on the shaft 33 and is provided with a number of holes 31 arranged in a circle and the member 30 is provided with a spring-pressed pin 47 adapted to be engaged in one of these holes. It will be obvious that the oscillation of the shaft 14 when released by the

latches 11 and 15, will withdraw the pin from the hole 31 in which it is normally located. It will stay out during the throwing out of one paper. The positive restoration of the lever 13 to its latched position brings the member 30 back so that the spring-pressed pin will rest against the surface of the counter-disc 32 and spring in to the next hole 31. This permits the disc 32 to remain behind the space between two adjacent holes, or one count, during each operation of the throw-out mechanism. The construction is shown as arranged to count off 25 collected products or 50 non-collected products, and if a collected product, or two non-collected products, be thrown out by this mechanism, the count will be corrected in the manner above described so that the proper number of products will be delivered and counted.

On the delivery of 25 papers, either with or without interruption, a notch 43 cut in the edge of the disc 32 comes in line with a spring-pressed roller 34 on a lever 35. This lever is fastened to a shaft 36 to which is also fastened the usual counter toe 37. This brings the toe in front of the 25th paper so that the latter will be ejected from the fan bucket at a point somewhat in advance of the usual guide 4 which is the ordinary operation. This causes that particular paper to lie on the delivery out of alignment with the remainder of the papers, thus separating every 25th paper. On the shaft 33 are pulleys 51 for driving the delivery belts 50 which are in the usual position. This is the usual construction.

To prevent any slippage of the disc 32 it is formed with a corrugated surface 38 against which a brake shoe 39 is pressed during the count rectifying period. The brake shoe 39 is carried by a lever 40 which is clamped to a freely turning shaft 41. This shaft is operated by a lever 42 which in turn is connected by a link 46 with the bell crank 25 and is restored by a spring 43 operating against a bracket 44.

It will be seen therefore that in operation the handle 10 is depressed. This withdraws the latch 11 so that on the turning of the fan shaft 18 through more than a half revolution, the lug 12 is released by the withdrawal of the spring latch 15. The shaft 14 is not now held in any way and the action of the spring 48 will turn it as stated above. This oscillates the bell crank 25 which swings the guide 5 into a position to intercept a paper coming down between the folding rollers. Only one paper can be intercepted because of the action of the spring 23 which holds the latch 11 back until the lever 13 is moved and then permits it to be restored by its own spring. Therefore when the lever 13 moves back, it will be latched back and the shaft 14 cannot be turned again. The face cam 19 acts to swing the shaft 14 positively back to original position before a half revolution of

the fan shaft is completed. The counting mechanism is thrown out of action when the paper throw-out guide 5 is in position to receive a paper and then restored immediately so that the count is rectified.

By means of this invention the count is kept correct. The pressman does not have to put in papers on the delivery belts to take the place of those taken out. Thus there is no danger of an incorrect number being in any bunch of papers and no danger of their being piled irregularly and clogging up the dispatch conveyors. No more than one paper can be ejected at each operation of the handle. The mechanism is all properly timed so that the action, after turning the handle, is automatic and it does not take place when the handle is turned, but when the fan is in the proper position.

Although I have illustrated and described only a single form of the invention I am aware of the fact that modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited to all the details of construction herein shown and described, but what I do claim is:—

1. In a delivery for a folding machine, the combination with means for intercepting a folded product and diverting it from the normal line of delivery, with means for automatically preventing the intercepting and diversion of more than one product at a time.

2. In a delivery for a folding machine, the combination with manually controlled means for intercepting one collected, or two non-collected products, and diverting the same from the normal path of delivery, of means operating automatically for preventing any more papers from being intercepted without further operation of the manual means.

3. In a delivery for a folding machine, the combination with a hand starting lever, and means controlled thereby for intercepting a product and diverting the same from the normal path of delivery, of means operating automatically for preventing any more papers from being intercepted without further operation of the handle, and means for automatically disconnecting the handle until the machine has completed a cycle of operation.

4. In a delivery for a folding machine, the combination with means for intercepting a folded product and diverting it from the normal line of delivery and a handle for starting said means into operation, with means for automatically disconnecting the handle, thereby preventing the intercepting and diversion of more than the desired number of products at a time.

5. In a delivery for a folding machine, the combination with the fan and means for guiding the folded products into and through the fan, of means for intercepting a product

before it enters the fan and diverting it therefrom, and means actuated by the rotation of the fan for releasing the intercepting means, whereby the actual operation of the intercepting means is controlled by the rotation of the fan.

6. In a delivery for a folding machine, the combination with the fan and means for guiding the folded products into and through the fan, of means for intercepting a product before it enters the fan and delivering it at one side, and means controlling the operation of the intercepting means through the operation of the fan for preventing repetitions of the operation of the intercepting means.

7. In a folding machine, the combination with a pair of folding rolls and the fan delivery, of a guide mounted on a pivot adapted to be swung from an inactive position into a position where it will receive a product from the folding rolls and divert it to one side of the machine, a handle for controlling the operation of the guide, a rock shaft, means whereby the actuation of the handle will remove an obstacle to the oscillation of the shaft, and means constantly tending to swing the shaft in opposition to the obstacle.

8. In a folding machine, the combination with the folding rolls and fan delivery, comprising a fan shaft, of a guide mounted on a pivot adapted to be swung from an inactive position into a position where it will receive a product from the folding rolls and divert it, a rock shaft, means rotatable with the fan shaft for removing an obstacle to the oscillation of the rock shaft, and means constantly tending to swing the shaft in opposition to the obstacle.

9. In a folding machine, the combination with the folding rolls and a delivery fan, of a rock shaft, two spring-pressed latches normally holding the rock shaft in its normal position, means constantly tending to move the rock shaft out of its normal position, means connected with the rock shaft for intercepting a printed product coming from the rolls when the rock shaft is actuated, a hand controlled means for retracting one of said latches and means operable with the fan for releasing the other latch.

10. In a folding machine, the combination with the folding rolls and a delivery fan, of means for intercepting a printed product coming from the rolls, two spring-pressed latches normally holding the intercepting means in its normal inactive position, means tending to move the intercepting means out of its normal position, a hand controlled means for retracting one of said latches and means operable with the fan for releasing the other latch before the fan has rotated half a revolution.

11. In a folder, the combination with folding rolls, of a guide oscillatable to and from a position for intercepting papers coming

through the rolls, a handle having a sliding projection, a cam having means for withdrawing said projection when the handle is turned, a disc having a notch for receiving said projection, a shaft about which the guide is adapted to turn and on which the disc is fixed, and means connected with said shaft for oscillating the guide.

12. In a folder, the combination with folding rolls and a delivery fan, of a guide oscillatable on an axis parallel with the axis of the fan shaft to and from a position for intercepting papers coming through the rolls, a handle oscillatable on the same axis as said means and having a sliding projection, a cam having means for withdrawing said projection when the handle is operated, a disc having a notch for receiving said projection, a shaft about which the guide is adapted to turn and on which the disc is fixed, and means connected with said shaft for oscillating the guide, said means being controlled by the position of the handle and by the rotation of the fan.

13. In a folding machine, the combination with the folding rolls and delivery fan, of an oscillatable shaft, an operating handle having a longitudinal pin with a tooth slidable along the handle, a disc on the shaft having a notch for receiving the tooth, a guide oscillatable on the shaft, a cam, means on the handle for engaging the cam to withdraw the pin when the handle has been operated, means connected with said shaft and means rotatable with the fan, cooperating to leave the guide free to turn on its shaft, means for turning said guide to bring it into a position to intercept a product between the rolls and the fan, and means for positively restoring the guide to inactive position.

14. In a folding machine, the combination with the folding rolls and delivery fan, of an oscillatable shaft parallel with the axis of the fan, an operating handle oscillatable about the shaft and having a longitudinal pin with a tooth on the end slidable along the handle, a disc on the shaft having a notch for receiving the tooth whereby the oscillation of the handle will move the disc with it, a guide oscillatable on the shaft having a cam thereon, means on the handle for engaging the cam to withdraw the pin when the handle has been operated to perform its function to free the disc from the pin, means connected with said shaft and means rotatable with the fan cooperating to leave the guide free to turn on its shaft, means for turning said guide to bring it into a position to intercept a product between the rolls and the fan and means whereby, before another product is delivered from the rolls, the guide will be restored to inactive position.

15. In a device for intercepting a printed product from a folding mechanism, the combination of a lever, a rock shaft to which the

lever is connected having a lug thereon, a pair of spring-pressed latches normally engaging the lug and holding the lever back to prevent the rock shaft from turning, an operating handle, means connected with said handle for withdrawing one latch, a fan having a fan shaft, means operated by said fan for withdrawing the other latch at a definite point in the rotation of the fan, yielding means constantly tending to move said lever and rock the shaft when the lug is free from both latches, and means connected with the rock shaft for intercepting a printed product.

16. In a device for intercepting a printed product from a folding mechanism, the combination of a lever, a rock shaft to which the lever is connected, a lug on the lever, a pair of spring-pressed latches normally engaging the lug and holding the lever back to prevent the rock shaft from turning, an operating handle, means connected with said handle for withdrawing one latch, a fan, a fan shaft, means operated by said fan for controlling the other latch, yielding means constantly tending to move said lever and rock the shaft when the lug is free from both latches, means connected with the rock shaft for intercepting a printed product, a lever connected with said hand lever, and a spring connected with the first named lever in position to prevent the last named lever from restoring that latch until the first named lever is restored to normal position and leaving it free at that time.

17. In a folding machine, the combination with the folding rolls and delivery fan, of a transverse rock shaft, said rock shaft having an arm thereon, a spring for normally tending to move said arm to rock the shaft from inoperative position, an arm on the shaft having means for introducing an intercepting element between the rolls and fan when the rock shaft is moved out to normal position, an operating handle having means for controlling the operation of the rock shaft, and automatic means for disconnecting the operating handle from the mechanism so that its motion thereafter will not affect it.

18. In a folding machine, the combination with the folding device and fan, of a manually movable handle, a paper intercepting guide, means connected with the handle for introducing the intercepting guide to prevent the passage of a product into the fan, a counting device, and means connected with the first named means for automatically rectifying the count thereof so that all the piles of products delivered will contain the same number of papers.

19. In a folding machine, the combination with the folding device and fan, of a manually movable handle, means connected with the handle for introducing an intercepting device to prevent the passage of a product into the fan, means for counting the products,

and means connected with the first named means for automatically rectifying the count thereof so that all the piles of products delivered will contain the same number of papers.

20. In a folding machine, the combination with the folding rolls and delivery fan, of a transverse rock shaft, said rock shaft having an arm thereon, a spring for normally tending to move said arm to rock the shaft from inoperative position, an arm on the shaft having means for introducing an intercepting element between the rolls and fan when the rock shaft is moved out to normal position, a counting device, and an arm on the rock shaft for disconnecting the counting device when the rock shaft is turned so that the counting device will not be actuated while a paper is being diverted.

21. In a folding machine, the combination with means for folding and delivering products and means for diverting a product out of the regular path, of a counting device, means for operating the counting device in time with the delivery, said counting device comprising a disc having a series of holes therein, a member having a pin for engaging in one of said holes, and means actuated with the diverting means for withdrawing the pin from its hole during the action of the machine in diverting one printed product, the last named means being arranged to set the pin back in the next hole in time for the next operation of the delivery.

22. In a folding machine, the combination with means for folding and delivering products and means for diverting a product out of the regular path of the folded products, of a counting device, means for operating the counting device in time with the delivery, said counting device comprising a disc having a series of holes therein equal to the number of papers to be delivered, automatic means for separating a bunch of papers when the desired number has been delivered, a member having a spring-pressed pin for engaging in one of said holes, to control the number of papers to be delivered, before they are separated and means actuated with the diverting means for withdrawing the pin from its hole during the action of the machine in diverting one printed product, the last named means being arranged to set the pin back in the next hole in time for the next operation of the delivery.

23. In a counting device for a delivery of folded products, the combination with an oscillatable shaft, of a counting disc having a series of holes arranged in a circle, a sliding member having a spring-pressed pin for engaging in one of said series, means connected with the oscillating shaft for withdrawing the pin when the shaft is oscillated and restoring the pin when the shaft has turned back to the normal position, means for posi-

tively restoring the said rock shaft to normal position, and a spring connected with said sliding means for normally moving the rock shaft into a position to retract the pin.

24. In a counting device for a delivery of folded products, the combination with an oscillatable shaft, of a counting disc having a series of holes arranged in a circle and a notch in the edge of the disc, means operated by the notch for separating the last product of a series so as to bunch the products in a predetermined number, a sliding member having a spring-pressed pin for engaging in one of said series, means connected with the oscillating shaft for withdrawing the pin when the shaft is oscillated and restoring the pin when the shaft has turned back to the normal position, a cam on the fan shaft for restoring the said rock shaft to normal position, a spring connected with said sliding means for normally moving the rock shaft into a position to retract the pin, a latch for holding the rock shaft in its normal inactive position, and a cam on the cam shaft connected to release said latch.

25. In a delivery for folding products, the combination with a delivery fan and a shaft, of a counter comprising a disc rotatable in unison with the fan shaft and having a series of holes around its circumference, a sliding member having a spring-pressed pin for engaging in one of the holes in the counting disc, a rock shaft having an arm for operating said member to withdraw the pin and having another arm adapted to control the diversion of a product from the fan, means on the fan shaft for controlling the operation of the diverting means, means connected with said slidable element for moving said sliding element when free into a position to withdraw the pin, and means on the fan shaft for positively restoring the rock shaft to a position in which the products can come through the fan and the pin is restored in a hole on the counting disc, whereby the counter will register the actual number of products delivered and will not be affected by the diversion of one or more products.

26. In a delivery for folding products, the combination with a delivery fan and a shaft, of a counter comprising a disc rotatable in unison with the fan shaft and having a series of holes around its circumference and a notch in its edge, of means cooperating with the notch for separating the delivered products into bunches of a predetermined number of products each, a sliding member having a spring-pressed pin for engaging in one of the holes in the counting disc, a rock shaft having an arm for operating said member to withdraw the pin and having another arm adapted to control the diversion of a product from the fan, means on the fan shaft for controlling the operation of the diverting means, means connected with said slidable

element for moving said sliding element when free into a position to withdraw the pin, means on the fan shaft for positively restoring the rock shaft to a position in which the products can come through the fan and the pin is restored in a hole on the counting disc whereby the counter will deliver the actual number of products desired before the notch comes into operating position, and will not be affected by the diversion of one or more products, and means carried by the sliding member for actuating the rock shaft.

27. In a delivery for a folding machine, the combination with means for intercepting a folded product and diverting it from the normal line of delivery, with means for automatically preventing the intercepting and diversion of more than the desired number of products at a time.

28. In a delivery for a folding machine, the combination with manually controlled means for intercepting one collected, or two non-collected products or a multiple thereof, and diverting the same from the normal path of delivery, of means operating automatically for preventing any more than the desired number of papers from being intercepted without further operation of the manual means.

In testimony whereof I have hereunto affixed my signature.

HENRY A. WISE WOOD.